

REMARKS

The present Amendment amends claims 1, 3-5, 7, 9 and 10 and leaves claims 2, 6 and 8 unchanged. Therefore, the present application has pending claims 1-10.

In paragraph 4 of the Office Action the Examiner objected to the Specification as allegedly failing to provide proper antecedent basis for the claimed subject matter. Specifically, the Examiner objects to the phrase “computer-readable recording medium”. This phrase was changed to “computer-readable storage medium” which corresponds to the description of the invention on page 10, lines 6-7 which describes “a storage unit (storage device) (112 or 123) for holding a program or data”. Therefore, the Specification as filed provides support for the invention as now claimed. Therefore, reconsideration and withdrawal of this objection is respectfully requested.

Claim 10 stands rejected under 35 USC §101 as allegedly being directed to non-statutory subject matter. Similar to the above noted rejection, the Examiner objects to the phrase “computer-readable recording medium”. This phrase was changed to “computer-readable storage medium” which corresponds to the description of the invention on page 10, lines 6-7 which describes “a storage unit (storage device) (112 or 123) for holding a program or data”. Therefore, the Specification as filed provides support for the invention as now claimed, said invention being an article of manufacture one of the permitted statutory classes of subject matter under 35 USC §101. Therefore, reconsideration and withdrawal of the 35 USC §101 rejection is respectfully requested.

Claims 1-5 and 8-10 stand rejected under 35 USC §103(a) as being unpatentable over Colle (U.S. Patent Application Publication No. 2004/0158568 A1) in view of Burnley (U.S. Patent No. 7,188,170 B1); claim 6 stands rejected under 35 USC §103(a) as being unpatentable over Colle in view of Burnley and further in view of Hinsley (GB 2293675 A); and claim 7 stands rejected under 35 USC §103(a) as being unpatentable over Colle in view of Burnley and further in view of Tanaka (U.S. Patent Application Publication No. 2003/0074387). These rejections are traversed for the following reasons. Applicants submit that the features of the present invention as now recited in claims 1-10 are not taught or suggested by Colle, Burnley, Hinsley or Tanaka whether taken individually or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw these rejections.

Amendments were made to the claims to more clearly describe features of the present invention as recited in the claims. Particularly, amendments were made to the claims to recite that the present invention is directed to a job scheduling management method for managing schedules of jobs allocated to computers connected through a network, a job scheduling management computer and a job scheduling management program.

According to the present invention the job scheduling management method includes monitoring a performance state of a resource of a computer, included in the computers, to which the jobs have been allocated.

As per the present invention the performance state includes first information indicating at least one of a usage rate of a Central Processing Unit (CPU) included in the computer, an amount of memory being used in the

computer, an amount of empty space on a disk storage device included in the computer, an average processing time for the disk storage device, and an average query processing time for a database application being executed by the computer.

Further, according to the present invention the job scheduling management method further includes determining if the performance state meets a predetermined condition, if the performance state meets the predetermined condition, detecting a job, of the jobs allocated to the computer, that is uncompleted at a timing when the predetermined condition is met, and detecting another computer that is available to execute the detected uncompleted job based on second information concerning resources required for executing the detected uncompleted job.

Still further, according to the present invention the second information includes an inter-resource distance which is a cost value taken when an execution computer of the computers uses an available resource included in a plurality of resources usable by the computers, the cost being defined as a value representing efficiency for use of the resources.

Still further yet, according to the present invention the job scheduling management method further includes allocating the detected uncompleted job to the detected other computer.

Thus, in the present invention, rescheduling is performed according to an index "an inter-resource cost" which is a unit cost taken when an available resource is used an execution server, thereby allocating a job to another server depending on the "an inter-resource cost". See page 15, lines 22-24 of the present application.

Further, in the present invention, correspondence between resources (including CPU, memory, disk, database or the like) and computers or servers are determined to calculate costs taken by remote access to the resources. In determining an available resource of another computer, it is essential to select a resource of lower cost and higher efficiency. To this end, the most efficient resource among the resources of other computers or servers is selected based on the tables of Figs. 4 and 6, and an uncompleted job is allocated to another computer having the selected resource. Thus, as per the present invention the resource having the lowest cost and the computer having the fastest processing speed is selected.

The above described features of the present invention now more clearly recited in the claims are not taught or suggested by any of the references whether said references are taken individually or in combination with each other as suggested by the Examiner. Particularly, the above described features of the present invention as now more clearly recited in the claims are not taught or suggested by Colle, Burnley, Hinsley or Tanaka whether said references are taken individually or in combination with each other as suggested by the Examiner.

Colle discloses in paragraph [0114] thereof that the conditions that cause the generation of an alert are determined depending upon how much the service time exceeds a predetermined end time. This teaching of Colle is not in any way related to the monitoring of a resource of the computer that may perform the requested job, and detecting whether the monitored resource exceeds a predetermined threshold or condition as in the present invention. This teaching of Colle is also not in any way related to the monitoring of a

resource of the computer where the resource could be at least one of a usage rate of a Central Processing Unit (CPU) included in the computer, an amount of memory being used in the computer, an amount of empty space on a disk storage device included in the computer, an average processing time for the disk storage device, and an average query processing time for a database application being executed by the computer as in the present invention.

Attention is directed to Fig. 9 of the present application.

The unique advantages of the present invention as described above is that the present invention provides a job scheduling function which makes the threshold check possible before job execution as well as at the time of job execution. The present invention permits determining whether or not the need for execution of a job as well as a job execution time can be based on a resource required for job execution, such as a CPU and an available capacity of a disk storage device. These features of the present invention as illustrated in Figs. 10 and 11 of the present application.

The above described features of the present invention as recited in the claims and the above described advantages of the present invention are not taught nor are they possible in Colle.

Thus, Colle fails to teach or suggest monitoring a performance state of a resource of a computer, included in the computers, to which the jobs have been allocated as recited in the claims.

Further, Colle fails to teach or suggest that the performance state includes first information indicating at least one of a usage rate of a Central Processing Unit (CPU) included in the computer, an amount of memory being used in the computer, an amount of empty space on a disk storage device

included in the computer, an average processing time for the disk storage device, and an average query processing time for a database application being executed by the computer as recited in the claims.

Still further, Colle fails to teach or suggest determining if the performance state meets a predetermined condition, if the performance state meets the predetermined condition, detecting a job, of the jobs allocated to the computer, that is uncompleted at a timing when the predetermined condition is met, and detecting another computer that is available to execute the detected uncompleted job based on second information concerning resources required for executing the detected uncompleted job as recited in the claims.

Still further yet, Colle fails to teach or suggest that the second information includes an inter-resource distance which is a cost value taken when an execution computer of the computers uses an available resource included in a plurality of resources usable by the computers, the cost being defined as a value representing efficiency for use of the resources as recited in the claims.

The above described deficiencies of Colle are not supplied by any of the other references of record. Particularly, the above described deficiencies of Colle are not supplied by Burnley, Hinsley or Tanaka when combined with Colle. Therefore, combining the teachings of Colle with one or more of Burnley, Hinsley and Tanaka still fails to teach or suggest the features of the present invention as recited in the claims.

Burnley is merely relied on by the Examiner for an alleged teaching of the determination as to if the predetermined condition is met is based on how

many times the usage rate of the CPU exceeds a predetermined usage rate as recited in claim 2. Applicants do not agree. In any event Burnley does not teach or suggest the above described deficiencies of Colle.

Hinsley discloses receiving an instruction to perform a process at a given node and performing the process at the node or another node depending on whether the local memory space or computing power is available at the node. However, the present invention allows for the use of an amount of empty space on a disk storage device included in the computer, an average processing time for the disk storage device, and an average query processing time for a database application being executed by the computer. These features are not taught or suggested by Hinsley.

Tanaka discloses extracting an execution time of a job based on a clock number of a CPU. However, the present invention monitors a resource of the computer which may perform the requested job, and detects whether the monitored resource exceeds a predetermined threshold or condition. These features are not taught or suggested by Tanaka.

Thus, each of Burnley, Hinsley and Tanaka, the same as Colle, fails to teach or suggest monitoring a performance state of a resource of a computer, included in the computers, to which the jobs have been allocated as recited in the claims.

Further, each of Burnley, Hinsley and Tanaka, the same as Colle, fails to teach or suggest that the performance state includes first information indicating at least one of a usage rate of a Central Processing Unit (CPU) included in the computer, an amount of memory being used in the computer, an amount of empty space on a disk storage device included in the computer,

an average processing time for the disk storage device, and an average query processing time for a database application being executed by the computer as recited in the claims.

Still further, each of Burnley, Hinsley and Tanaka, the same as Colle, fails to teach or suggest determining if the performance state meets a predetermined condition, if the performance state meets the predetermined condition, detecting a job, of the jobs allocated to the computer, that is uncompleted at a timing when the predetermined condition is met, and detecting another computer that is available to execute the detected uncompleted job based on second information concerning resources required for executing the detected uncompleted job as recited in the claims.

Still further yet, each of Burnley, Hinsley and Tanaka, the same as Colle, fails to teach or suggest that the second information includes an inter-resource distance which is a cost value taken when an execution computer of the computers uses an available resource included in a plurality of resources usable by the computers, the cost being defined as a value representing efficiency for use of the resources as recited in the claims

Therefore, since each of Colle, Burnley, Hinsley and Tanaka fails to teach or suggest the features of the present invention as now more clearly recited in the claims, combining these references in the manner suggested by the Examiner in the Office Action does not render obvious the claimed invention. Accordingly, reconsideration and withdrawal of the rejections of the claims under 35 USC §103(a) is respectfully requested.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 1-10.

In view of the foregoing amendments and remarks, Applicants submit that claims 1-10 are in condition for allowance. Accordingly, early allowance of the present application based on claims 1-10 is respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of BRUNDIDGE & STANGER, P.C., Deposit Account No. 50-4888 (500.43289X00).

Respectfully submitted,

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